CLAIM

1. A storage apparatus comprising:

a lens moving unit for moving an objective lens in the direction of its optical axis;

a focus error detection unit for sensing a targeted position error of the objective lens;

a focus search control unit for outputting an order to move the objective lens to the vicinity of a targeted position;

a focus servo control unit for causing the objective lens to follow the targeted position; and

a trajectory generating unit disposed at the focus search control unit and for generating a position trajectory to move the objective lens such that the objective lens approaches a targeted position gradually, wherein

the position trajectory output from the trajectory generating unit is a position trajectory with which resonance frequency components that the lens moving unit has are removed or attenuated by making smooth the variation of acceleration of the objective lens moved by the lens moving unit.

2. A storage apparatus comprising:

a focus actuator for moving an objective lens in the direction of its optical axis;

a focus error signal detection circuit for detecting the displacement of the objective lens in the vicinity of its focal point;

a focus search control unit for outputting an order to move the objective lens to the vicinity of the focal point;

a focus servo control unit for causing the objective lens to follow the position of the focal point; and

a trajectory generating unit disposed at the focus search control unit and for generating a position trajectory to move the objective lens such that the objective lens approaches a targeted position gradually, wherein

the position trajectory output from the trajectory generating unit is a position trajectory with which resonance frequency components that the lens moving unit has are removed or attenuated by making smooth the variation of acceleration of the objective lens moved by the lens moving unit.

3. The apparatus according to claim 1 or 2, wherein the position trajectory output from the trajectory generating unit is defined by a

function of third order or higher with respect to time.

4. The apparatus according to claim 1 or 2, wherein the position trajectory output from the trajectory generating unit is defined by a combination of trigonometric functions.

5. The apparatus according to claim 1 or 2, wherein the position trajectory output from the trajectory generating unit is defined by any function of which the second order differential for time is continuous.

6. A focus control method of an apparatus comprising a lens moving unit for moving an objective lens in the direction of its optical axis, a focus error detection unit for sensing a targeted position error of the objective lens, a focus search control unit for outputting an order to move the objective lens to the vicinity of a targeted position, and a focus servo control unit for causing the objective lens to follow the targeted position, wherein

a position trajectory is generated for moving the objective lens such that the objective lens approaches the targeted

position gradually, and wherein the position trajectory output from the trajectory generating unit is a position trajectory with which resonance frequency components that the lens moving unit has are removed or attenuated by making smooth the variation of acceleration of the objective lens moved by the lens moving unit.

7. A focus control method of an apparatus comprising a focus actuator for moving an objective lens in the direction of its optical axis, a focus error signal detection circuit for detecting the displacement of the objective lens in the vicinity of a focal point, a focus search control unit for outputting an order to move the objective lens to the vicinity of the focal point, and a focus servo control unit for causing the objective lens to follow the position of the focal point, wherein

a position trajectory is generated for moving the objective lens such that the objective lens approaches a targeted position gradually, and wherein the position trajectory output from the trajectory generating unit is a position trajectory with which resonance frequency components that the lens moving unit

has are removed or attenuated by making smooth the variation of the acceleration of the objective lens moved by the lens moving unit.

8. The method according to claim 6 or 7, wherein the position trajectory is defined by a function of third order or higher with respect to time.

9. The method according to claim 6 or 7, wherein the position trajectory is defined by a combination of trigonometric functions.

10. The method according to claim 6 or 7, wherein the position trajectory is defined by any function of which the second order differential for time is continuous.